## REMARKS

### Status Summary

In this Amendment, no claims are canceled, and claims 36-44 are added. Claims 32-35 were canceled in Applicants' Response to Restriction Requirement dated July 30, 2003. Therefore, upon entry of this Amendment, claims 1-31 and 36-44 will be pending.

### Claim Objections

Claims 5 and 25 were objected to as containing informalities. Appropriate correction has been made to claims 5 and 25. Accordingly, it is respectfully requested that the objection to the claims should be withdrawn.

### Amendments to the Specification and Drawings

Minor amendments have been made to the specification and drawings to correct typographical errors. The amendments to the specification and drawings do not add any new matter.

### Claim Rejections 35 U.S.C. §103

Claims 1-31 were rejected as unpatentable over U.S. Patent No. 5,923,659 to Curry et al. (hereinafter, "Curry"). This rejection is respectfully traversed.

Independent claim 1 of the present application recites a method for connecting an edge device to a plurality of signaling points using a plurality of fixed-bandwidth SS7 signaling links. A second interface of the edge device is connected to an IP-capable node using a variable bandwidth signaling link. Messages received from the SPs over

the fixed-bandwidth signaling links are multiplexed and transmitted over the variable bandwidth signaling link. As illustrated in Figure 3 of the present application, edge device **306** is connected to SSPs **300**, **302**, and **304**. Edge device **306** multiplexes messages received over signaling links **308**, **310**, and **312** and forwards the messages over variable bandwidth signaling link **316**. An advantage of such multiplexing is that it concentrates traffic from three under-utilized links onto a single variable-bandwidth link and reduces operating and connectivity costs. (See page 18, lines 9-23 of the present specification.) Independent claim 15 likewise includes an edge device that multiplexes SS7 messages received over a plurality of fixed-bandwidth SS7 signaling links and transmits the messages over a variable-bandwidth signaling link.

There is absolutely no teaching or suggestion in Curry of receiving messages over a plurality of fixed-bandwidth SS7 signaling links, multiplexing the messages, and transmitting the messages over a variable bandwidth signaling link. As a preliminary matter, we note that Curry does not even mention multiplexing signaling messages from SS7 signaling links. Thus, for this reason alone, it is respectfully submitted that the rejection of claims 1, 15, and their respective dependent claims as unpatentable over Curry should be withdrawn.

Moreover, in the network examples presented in Curry, such multiplexing would not be performed because it is not required to complete connections between the called and calling stations **100** and **122** illustrated in Figure 12 of Curry. Column 21, lines 20-50 of Curry describes the operation of the network illustrated in Figure 12 of Curry. For example, Curry states:

> SSP **104** recognizes the call as directed to another switching office, suspends a call, formulates an SS7 packet message, and sends the SS7 message to STP **118**. STP **118** analyzes the point code information in the packet and routes the packet according to the translation table stored within the STP. That translation table recognizes the foreign prefix as one requiring modified common channel signal handling and directs the packet to Internet module **130** for transmission over an Internet route. (See column 21, lines 14-24 of Curry.)

From this passage, the combined functions of STP **118** and server Internet module **130** are to route a single signaling message from a single end office SSP **104** to the foreign exchange. There is no reason that STP **118** and/or server Internet module **130** would multiplex any messages received from multiple SS7 signaling points because the only messages that server Internet module **130** receives are those originating from SSP **104** that are destined for a foreign exchange. Accordingly, for this additional reason, it is respectfully submitted that the rejection of claims 1, 15, and their respective dependent claims should be withdrawn.

Despite the overwhelming evidence to the contrary, page 3 of the Official Action indicates that it would be inherent that messages originating from the various SSPs will be multiplexed together so that they can be sent over the IP-capable link. Applicants respectfully disagree with this contention for the reasons stated in the preceding paragraphs and because the structure of the network illustrated in Figure 12 of Curry mandates that the only SSP that originates signaling messages destined for server Internet module **130** is end office SSP **104**. SSP **110** illustrated in Figure 12 of Curry is part of a tandem office **106**. A tandem office **106** does not originate calls or call-related messages, because tandem offices are not connected to subscriber lines. Similarly, SSP **116** in Figure 12 of Curry is part of point of presence **114**. The purpose of point of

presence **114** is to connect the local exchange with the foreign exchange via satellite **124**. SSP **116** therefore does not originate any messages that would be multiplexed STP **118** or server Internet module **130**.

Further supporting the fact that end office SSP **104** is the only SSP that originates signaling messages for server Internet module **130** is the fact that the connections between SSP **110** and SSP **116** and STP **118** are only for purposes of routing messages between SSP **110**, SSP **116**, and SSP **104**. For example, in column 18, lines 62-66, Curry discloses that connections **108** and **112** illustrated in Figure 12 are trunks. Trunks carry voice information, rather than SS7 signaling information. Thus, it is necessary to use STP **118** to connect SSPs **110** and **116** to SSP **104**, for example, for calls that are routed via satellite **124**. There is absolutely no teaching or suggestion in Curry that SSP **110** and SSP **116** route signaling messages to the foreign exchange via server Internet module **130**. Therefore, for this additional reason, the rejection of claims 1 and 15 and their respective dependent claims should be withdrawn.

Claim 11 of the present application recites a method of connecting SS7 signaling points in a mesh network. The method of claim 11 includes connecting a first interface of a first edge device to first and second SPs in a mesh network using first and second fixed-bandwidth SS7 signaling links. The interface of a second edge device is connected to third and fourth SPs in a mesh network using third and fourth fixed-bandwidth SS7 signaling links. A second interface of the first edge device is then connected to a second interface of the second edge device using a variable bandwidth signaling link. Figure 7 of the present application illustrates an embodiment of the method claimed in claim 11. In Figure 7, edge device **708** connects to SSPs **700** and

**706** via fixed bandwidth signaling links **718** and **716**. Similarly, edge device **710** connects to SSPs **702** and **704** via fixed bandwidth signaling links **712** and **714**. Edge device **708** is connected to edge device **710** via a variable bandwidth signaling link.

The configuration illustrated in Figure 7 avoids the need to add n fixed-bandwidth SS7 signaling links every time a new SSP is added to a network with n existing SSPs. For example, in the prior art configuration of Figure 2, each time an SSP is added to the mesh, n fixed-bandwidth SS7 signaling links must be added to the network to connect the new SSP to the remaining n SSPs in the mesh network. In contrast, in the architecture illustrated in Figure 7, adding an SSP to the network requires only a single fixed-bandwidth SS7 signaling link to connect the SSP to all of the other SSPs in the network. (See page 23, lines 1-12 of the present specification.)

There is absolutely no teaching or suggestion in Curry of connecting SS7 signaling points to first and second edge devices using fixed-bandwidth signaling links and connecting the edge devices together using a variable-bandwidth signaling link. In Curry, all of the signaling links connected to STPs **132** and **148** are disclosed as being fixed-bandwidth SS7 signaling links. For example, Curry states:

> The connections from the telephone station **100** and the interexchange carrier point of presence are made through the use of common channel signaling over the CCIS network which is here illustrated as including a signal transfer point (STP) connected by data links to the signal switch points **104**, **110**, and **116**. (See column 19, lines 1-8 of Curry.)

The interconnections in the remote network of Figure 12 of Curry are also disclosed as being common channel signaling links. For example, Curry states:

> It is assumed that the foreign switching office is in a telephone network equipped with a common channel signaling system which provides essentially the same capabilities as the SS7 network, as is the case with the Japanese telephone system. Thus, FIG. 12 shows connection to SSP **142**, STP **148**, and SSP **146** in the end switching office **128**. Alternatively, the common channel signaling capability may be furnished by F link connection between the switching offices as shown at **150**. (See column 19, lines 57-65 of Curry.)

Thus, from the preceeding two passages above, Curry discloses that the only connections that connect STPs **118** and **148** to the SSPs are fixed-bandwidth SS7 signaling links.

Similarly, the only connections that connect STPs **118** and **148** to server Internet modules **130** and **140** are fixed-bandwidth SS7 signaling links. For example, Curry states:

> The server **130** is connected by datalink **132**, which may be an SS7 link, to signal transfer point (STP) **118**. (See column 19, lines 45-47 of Curry.)

Since Curry teaches only that STPs **118** and **148** are connected to fixed-bandwidth SS7 signaling links, it would not have been obvious to a person of skill in the art at the time the invention was made to connect SS7 SPs via fixed bandwidth signaling links and variable bandwidth signaling links using first and second edge devices as claimed in claim 11.

With regard to claim 11, the Official Action states:

> Regarding claim 11 more specifically, the network shown in Fig. 12 is somewhat symmetrical, where the STP/Internet module combination on the left side is like the STP/Internet module combination on the right side of the network. Like STP 118, STP 148 is also connected to two SSPs, **142** and **146** (a first interface of a second edge device to third and fourth SPs). As mentioned previously, the Internet modules are connected by TCP/IP links through the Internet. (See paragraph 5 of the Official Action.)

Paragraph 5 of the Official Action indicates that the combination of the server Internet modules and the STPs of Curry render claim 11 obvious. However, this reasoning ignores the fact that Curry states that it is not even necessary that server Internet module **130** be connected to STP **118**. For example, Curry states:

> The server **130** is connected by a data link **132**, which may be an SS7 link, to the signal transfer point (STP) **118**. The actual connection need not be to the specific STP **118** so long as the server is connected to the SS7 CCIS network of the LEC which serves the calling station **100**. (Emphasis Added.) (See column 19, lines 45-49 of Curry.)

From this passage, Curry teaches that it is not even necessary to connect server Internet module **130** to STP **118**. Accordingly, because the reference itself teaches away from combining server Internet module **130** with STP **118**, for this additional reason, the rejection of claim 11 and its dependent claims should be withdrawn.

Independent claim 21 is directed to a method for connecting SS7 signaling points to an IP capable node. Independent claim 21 has been amended to recite that the edge device is located proximally to a plurality of SPs. The edge device is connected to the plurality of SPs using fixed-bandwidth SS7 signaling links. The edge device is then connected to an IP-capable of node located remotely from the edge device using a variable-bandwidth signaling link.

As stated above with regard to claim 11, in Curry, all of the signaling links connected to STPs **118** and **148** are disclosed as being fixed-bandwidth SS7 signaling links. Curry fails to teach or suggest the fixed- and variable-bandwidth connections of the edge device claimed in claim 11. In addition, because Curry teaches that the interconnection between the server Internet modules and the STPs is not required, it

would not have been obvious to a person of skill in the art to combine the server Internet modules of Curry with the STPs of Curry. Thus, it is respectfully submitted that the rejection of claim 21 and its dependent claim should be withdrawn.

Independent claim 25 recites a computer program product for receiving SS7 signaling units over at least one fixed-bandwidth signaling link, filtering out predetermined first types of SS7 signaling units received over the fixed-bandwidth signaling link, passing predetermined second types of signaling units received over the SS7 signaling links, and encapsulating the predetermined second types in IP datagrams to be forwarded to an IP-capable node over a variable-bandwidth signaling link. As stated on pages 21 and 22 of the present specification, an edge device may receive various types of SS7 signaling units, such as message signaling units (MSUs), link status signaling units (LSSUs), and fill-in signaling units (FISUs). Since some of these signal units are not used on IP links and can unnecessarily consume bandwidth, the edge device filters these signaling units.

There is absolutely no teaching or suggestion in Curry of filtering out predetermined types of SS7 signaling units from transmission over a variable bandwidth signaling link. The only type of signaling units transmitted over a variable bandwidth signaling link of Curry is disclosed as being "an SS7 packet message" used to initiate a call between the local and foreign exchanges. (See column 21, line 18 of Curry.) Since an SS7 packet message used to set up a call is an MSU, the only type of SS7 message that Curry teaches as being processed by its STP or server Internet module is a message signaling unit. Curry does not teach or suggest that the STPs or server Internet modules process any other SS7 signaling unit type or that they filter certain

SS7 signaling unit types. Accordingly, it is respectfully submitted that the rejection of claim 25 and its dependent claims should be withdrawn.

Claims 4 and 20 were rejected under 35 U.S.C. § 103(a) as unpatentable over Curry in view of U.S. Patent No. 5,173,879 to Schrodi et al. (hereinafter, "Schrodi"). This rejection is respectfully traversed.

Claims 4 and 20 depend respectively from claims 1 and 15. As discussed above, Curry fails to teach or even remotely suggest a method or an edge device connects to a plurality of SS7 signaling points using fixed-bandwidth SS7 signaling links and that multiplexes messages received from the plurality of SS7 signaling points over a variable bandwidth signaling link. Schrodi likewise fails to teach or suggest this invention. Schrodi is directed to a method for sequencing ATM cells. There is absolutely no teaching or suggestion in Schrodi of connecting SS7 signaling points via fixed or variable bandwidth SS7 signaling links. Thus, for this reason alone, the rejection of claims 4 and 20 as unpatentable over Curry in view of Schrodi should be withdrawn.

Moreover, the Official Action indicates that column 1, lines 34-47 of Schrodi discloses adding application level sequence numbers to transport adapters layer interface packets as claimed in claims 4 and 20. Applicants respectfully disagree. The only sequence numbers disclosed in Schrodi are ATM cell sequence numbers. Since ATM is a physical layer protocol, which is distinct from an application layer protocol, for this additional reason, Curry fails to teach the invention claimed in claims 4 and 20. Accordingly, it is respectfully requested that the rejection of claims 4 and 20 as unpatentable over Curry in view of Schrodi be withdrawn.

## New Claims

New claims 36-44 are proposed to be added. New claims 37, 39, 41, and 43 indicate that the SS7 signaling points comprise service switching points (SSPs). Support for these claims is found throughout the specification, for example, as illustrated in Figure 7 of the present specification. Claims 36, 38, 40, and 42 indicate that the SSPs comprise end offices. Support for these claims is found, for example, in the drawings and on page 3, lines 11-13 of the present specification.

## CONCLUSION

In light of the above amendments and remarks, it is respectfully submitted that the present application is now in proper condition for allowance, and such action is earnestly solicited.

If any small matter should remain outstanding after the Patent Examiner has had an opportunity to review the above Remarks, the Patent Examiner is respectfully requested to telephone the undersigned patent attorney in order to resolve these matters and avoid the issuance of another Official Action.

DEPOSIT ACCOUNT

The Commissioner is hereby authorized to charge any fees associated with the filing of this correspondence to Deposit Account No. **50-0426**.

Respectfully submitted,

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Date: April 30, 2004 By: _____

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Enclosures